

The Examiner states that the information disclosure statement previously filed fails to comply with 37 C.F.R. 1.97, 1.98 and MPEP §609 for not providing a publication date of an article and a copy of Des. 275,032. Enclosed herewith is a new IDS presenting Des. 275,032. An IDS for the article will be filed as soon as the publication date is determined.

The Examiner rejects the drawings under 37 C.F.R. 1.83(a) for failing to show every feature of the invention specified in the claims and under 37 C.F.R. 1.84(p)(5) for failing to include a reference sign mentioned in the description. In response, the applicant encloses herewith a marked up copy of Figure 2 to show the heating elements and include the reference sign for the delivery pipe to overcome the Examiner's objections. Applicant has cancelled claim 15, which obviates the need to show the adjustable slits in the drawings.

The Examiner rejects claims 6 and 15 under 35 U.S.C. §112 as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In response, applicant has amended claim 6 and cancelled claim 15 through the above amendments to overcome the Examiner's rejection.

The Examiner also rejects claims 1, 7-13, 17-20 and 24-28 under 35 U.S.C. §102(a) as being anticipated by U.S. Patent No. 6,090,458 to Murakami.

The applicant's invention is directed to a scanning plasma reactor for exciting or ionizing reactant gases with UV radiation at a substrate surface comprising a beam forming module to transform a UV radiation source raw output into a rectangular beam, a gas injection module to deliver at least one reactant gas to the substrate surface, a reaction chamber with a UV window through which said beam forming module projects said rectangular beam, a vacuum chuck for holding a substrate; and a gas exhaust module inside said chamber to remove reaction by-products and unreacted reactant gas from the substrate

surface, wherein said gas injection module and said gas exhaust module are in close proximity to said rectangular beam, and wherein said rectangular beam, said gas injection module and said gas exhaust module are movable relative to the substrate surface.

Specifically, Murakami fails to disclose a gas exhaust module inside the chamber and that the gas injection module and said gas exhaust module are in close proximity to said rectangular beam as claimed by the applicant in claim 1.

Murakami is directed to a method and apparatus for film formation by chemical vapor deposition. Murakami discloses a reactive gas 101 supplied by gas source 100 onto substrate 104 into chamber 103 through gas inlet port 102. Laser beam 106 is emitted from a laser oscillator 105 through glass window 111. Exhaust gas is discharged after being treated by exhaust gas treatment section 117. See Col. 3, lines 27-52 and Figs. 3 and 10 of Murakami. Nowhere does Murakami disclose, teach or suggest that the gas exhaust module is inside the chamber as claimed by the applicant. Indeed, Figures 3, 5 and 9-11 of Murakami clearly show that the exhaust gas treatment section of Murakami is located outside of the chamber. Accordingly, Murakami fails to disclose a feature of the claimed invention; that the gas exhaust module is located inside the chamber.

Additionally, nowhere does Murakami disclose, teach or suggest that the gas injection module and gas exhaust module are in close proximity to the rectangular beam as claimed by the applicant. Indeed, Figures 3, 5 and 9-11 of Murakami clearly show that the exhaust gas treatment 117 is nowhere near the gas inlet port 101 and laser beam 30, and is clearly not in close proximity to the gas inlet port and laser beam as claimed by the applicant. Accordingly, Murakami fails to disclose another feature of the claimed invention.

As Murakami fails to disclose each and every element of the claimed invention, independent claims 1 and 28, and dependent claims 7-13, 17-20 and 24-27 are patentable over Murakami.

The Examiner rejects claims 2-6 under 35 U.S.C. §103(a) as being unpatentable over Murakami in view of U.S. Patent No. 5,814,156 to Elliot *et al.* and U.S. Patent No. 4,264,330 to Schmidt *et al.* However, independent claim 1 is patentable for the above reasons, and dependent claims 2-6 are patentable over Murakami for at least those reasons. Accordingly, claims 2-6 are patentable over the combination of references.

The Examiner rejects claim 14 under 35 U.S.C. §103(a) as being unpatentable over Murakami in view of U.S. Patent No. 5,002,631 to Giapis *et al.* However, independent claim 1 is patentable for the above reasons, and dependent claim 14 is patentable over Murakami for at least those reasons. Accordingly, claim 14 is patentable over the combination of references.

The Examiner rejects claim 23 under 35 U.S.C. §103(a) as being unpatentable over Murakami in view of U.S. Patent No. 6,374,770 to Lee *et al.* However, independent claim 1 is patentable for the above reasons, and dependent claim 23 is patentable over Murakami for at least those reasons. Accordingly, claim 23 is patentable over the combination of references.

The Examiner rejects claim 29 under 35 U.S.C. §103(a) as being unpatentable over Murakami in view of U.S. Patent No. 6,136,096 to Morishige. However, independent claim 29 also includes the feature that the gas exhaust module is inside the chamber, and is patentable over Murakami for at least the above reasons. Accordingly, claim 29 is patentable over the combination of references.

Each of the Examiner's rejections has been addressed or traversed. Accordingly, it is respectfully submitted that the application is in condition for allowance. Early and favorable action is respectfully requested.

If for any reason this Response is found to be incomplete, or if at any time it appears that a telephone conference with counsel would help advance prosecution, please telephone the undersigned or his associates, collect in Waltham, Massachusetts, at (781) 890-5678.

Respectfully submitted,



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(Conce orended)

comprises

- 1 6. The scanning plasma reactor of claim 5 wherein said beam forming module ~~consists~~
- 2 ~~of~~ at least two cylindrical refractive elements.
- 3

AMENDED PORTION OF SPECIFICATION

The reaction chamber contains vacuum chuck 12 which may include a heating element 17 [(not shown)] to increase reaction rates, such as for film deposition, etching, melting or other modification. The controlled atmosphere of reactive gas is provided within a closed reaction chamber 13 which is sufficiently sealed to hold sub-ambient pressure in the ~700-450 torr range. A stream of reactive gas is injected through injector nozzle 23. Chamber pressure is maintained by balancing the rate and amount of gas injected into the chamber with the amount of gas withdrawn through exhaust nozzle 24 and exhaust port 25.